

Preventing Worker Fatigue Among Ebola Healthcare Workers and Responders



The National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) recognize that healthcare workers and responders involved with cases related to Ebola in the United States may be required to work longer or unusual shifts. This can involve extended shifts (more than 8 hours long), rotating or irregular shifts, or consecutive shifts resulting in more than the typical 40-hour work week. Long work hours may increase the risk of injuries and accidents and can contribute to poor health and worker fatigue. Additionally, the personal protective equipment (PPE) required for working with Ebola patients can increase workers' core body temperature, contributing significantly to fatigue. Although these guidelines are geared toward workers responding in the United States, the same concepts apply to those working in other countries.

What is Worker Fatigue?

- Fatigue is physical or mental exhaustion that can be triggered by stress; medication; overwork (heavy workload without conditioning); excessive heat; or underlying medical conditions such as mental and physical illness or disease.
- Several factors, including too little sleep or poor quality sleep over a period of time, can cause fatigue. Fatigue is the body's signal that a rest period is needed.
- Sleep is a biological need for life and health, similar to the need for food.¹ The body is naturally designed for sleeping 7–8 hours during the nighttime. Working at night, at irregular times, and over long shifts can lead to shorter sleep duration and poorer quality sleep.
- Fatigue makes workers feel weary or unmotivated, reduces physical capacity, reduces productivity, and increases risk for worker errors and injuries.



What are the Effects of Worker Fatigue?

- Research indicates that working 12 hours per day is associated with a 37% increased risk of injury². Accident and injury rates³ are 18% greater during evening shifts and 30% greater during night shifts when compared with day shifts.
- Errors in donning and doffing PPE, more needlesticks and other exposure to blood and other body fluids, and more occupational injuries among healthcare workers can occur.
- Fatigue and stress from strenuous work schedules can be compounded by heavy physical workloads, long commutes, and personal demands on workers.

Shared Responsibility between Employers and Workers

- Employers and workers need to view sleep as a critical logistical item, just like water, food, and the supplies needed to carry out work. Both employers and workers need to make good quality sleep a priority.

What Can Employers Do?

Plan

- Develop and implement a written Fatigue Risk Management Plan (FRMP) or system to reduce worker health and safety risks. Please visit the CDC/NIOSH webpage on [Work Schedules: Shift Work and Long Work Hours](#) for more information. The employer's program should include:
 - a means of collecting and disseminating information on the hazards of fatigue, analyzing its risk, and implementing workplace controls;
 - a reporting system for employees for injuries, illnesses, and incidents associated with fatigue; incident investigation—considering fatigue as a possible cause (more information on [Accident/Incident Investigation](#) is available on the OSHA website);
 - training and education for employees and management; and
 - a review of the FRMP within a few months after inception and then annually thereafter to determine its effectiveness and implement any need for workplace improvements.

Train

- Provide worker training on the hazards and symptoms of worker fatigue; the impact of fatigue on health and personal interactions at work; personal strategies to get adequate sleep; and the importance of diet, exercise, and stress management strategies to minimize the adverse effects of fatigue.
- Ensure workers are appropriately evaluated and trained for suitable work in the use of required PPE. (See OSHA PPE standards, including those at [29 CFR 1910.132](#), [1910.133](#), [1910.134](#), and [1910.138](#))

Promote Rest Periods

- Establish at least 10 consecutive hours per day of protected time off-duty for workers to obtain 7–8 hours of sleep. Rest and daily recovery sleep are the best protections against excessive fatigue in sustained operations. Allowing only shorter off-duty periods (such as 4–5 hours) can compound the fatigue of long work hours.
- Plan 1 or 2 full days of rest to follow five consecutive 8-hour shifts or four 10-hour shifts. Plan 2 rest days after three consecutive 12-hour shifts. Days off are important to allow extra time to recover. If days off are not logistically possible, plan work schedules so workers have occasional “no alarm days” that would allow them to sleep until they naturally wake up without the aid of an alarm clock.
- Schedule adequate opportunities for rest breaks during work shifts. Frequent brief rest breaks (such as every 1–2 hours) during demanding work are more effective against fatigue than a few longer breaks. Allow longer than normal breaks for meals.

Examine Shift Lengths and Work Loads

- Examine work demands with respect to workload and shift length. Five 8-hour shifts or four 10-hour shifts per week are usually manageable. Depending on the workload, 12-hour days may be tolerable with more frequent interspersed rest days. Twelve-hour shifts are more tolerable for “lighter” tasks (such as desk work). Shorter work shifts help counteract fatigue from highly cognitive or emotionally intense work, physical exertion, the use of a full ensemble of required PPE, extreme environments, and exposure to other health or safety hazards. Evaluate increased heat loads associated with the required PPE to ensure appropriate work-rest cycles.

- Implement shorter shifts (such as 8 hours) during the evening and night, because shorter shifts are better tolerated than longer shifts. Night work intensifies fatigue because of the brain's strong pressure to sleep during the night and the tendency to sleep poorly during the daytime.
- Examine staffing issues such as understaffing and worker absences (scheduled and unscheduled), which can contribute to worker fatigue.
- Establish procedures for meeting the workload when a worker is unable to work due to fatigue (such as reduce expectations, request new staff).
- Consider allowing naps during work breaks. Scientific evidence shows that our brains benefit from a brief period of actual sleep (a 15–30 minute nap) to recover from fatigue and to help restore alertness.

Monitor

- Conduct health monitoring and surveillance to assess the physical and mental health of the workers before, during, and after the increased work demands associated with the Ebola response. Please see the [Emergency Responder Health Monitoring and Surveillance](#) topic page on the NIOSH website.

Control the Environment

- Design the work environment to promote alertness by making adjustments to lighting and temperature to increase worker comfort and reduce fatigue. Please see [Fatigue Risk Management in the Workplace: ACOEM Guidance Statement](#) for specific recommendations.

Provide Services to Reduce Non-work Demands on Workers Scheduled for Long Work Hours

- Provide [Employee Assistance Program \(EAP\)](#) and healthcare services for workers involved in the Ebola response. For information on EAP programs, see [Employee Assistance Programs for a New Generation of Employees](#).
- Make healthy foods and drinks available at the worksite.
- To prevent drowsy driving crashes, consider arranging rooms to sleep close to the worksite or transportation to sleeping rooms for workers fatigued after work shifts.
- Consider laundering of clothes to reduce non-work demands.

What Can Workers Do?

- Use the buddy system so that buddies can monitor each other and promote activities to increase the alertness of their partner. For more information, please see [The Buddy System](#) on the CDC Ebola Web Page.
- Always report workplace hazards to supervisors, including health and safety risks caused by a worker whose functioning is compromised because he or she is fatigued.
 - [Paragraph 11\(c\)](#) of the [Occupational Safety and Health Act](#) prohibits employers from retaliating against workers for raising concerns about safety and health conditions. OSHA encourages workers who suffer such discrimination to [submit a complaint to OSHA](#). Such complaints must be filed within 30 days.
- Sleep 7–8 hours every 24-hour period without disruptions. You've had enough sleep if you feel refreshed when you wake, don't feel drowsy during the day, and don't need much caffeine during the day.
- Sleep at the same time every day.
- Avoid liquids, alcohol, and heavy or spicy meals 2–3 hours before bedtime.
- Consume caffeine appropriately and according to your own sensitivity. Caffeine is a stimulant that can help you stay awake, but it can also affect your body for 5 hours or more. Plan any caffeine intake so that it does not

prevent you from getting good sleep. Be cautious about using extra-strength caffeinated products, such as energy drinks. Too much caffeine can cause severe disturbances to the heart and nervous system.

- Keep light levels low for 1–2 hours before bedtime. Stop using computers or other devices with backlit electronic screens during this time. If you must use them, turn down the screen brightness and wear dark sunglasses.
- Make sure that the sleeping environment is comfortable, cool, dark, and quiet. Reduce noise by wearing earplugs and by silencing cell phones. If you have to sleep during daylight hours, wear an eye mask or block any light from entering the bedroom through windows or doorways.
- If you are working evening or night shifts, get adequate sleep and rest before the shift to avoid coming to work fatigued. Plan to avoid being awake no more than 16 hours by the end of your shift.
- Keep a sleep diary and talk to a doctor if you have difficulty sleeping or have sleepiness or fatigue during work.
- To reduce the chance for an extended period of grogginess after taking a nap, use either short naps lasting less than 45 minutes or longer naps lasting 1.5 hours.
- Exercise regularly. Eat a balanced diet spaced out across the work shift. Stay hydrated. Maintain a healthy weight.

Additional Resources

[Interim NIOSH Training for Emergency Responders: Reducing Risks Associated with Long Work Hours](#). National Institute for Occupational Safety and Health. The 30-minute online training is for workers and their managers to learn strategies to reduce risks that are linked to working long hours.

[Plain Language About Shiftwork](#) (PDF). National Institute for Occupational Safety and Health (NIOSH Pub. No. 94-145, July 1997). Gives basic facts about shiftwork and ways to make shiftwork life easier.

[Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries and Health Behaviors](#) (PDF). National Institute for Occupational Safety and Health (NIOSH Pub. No. 2004-143, April 2004). Summarizes recent findings about the relationship between overtime and extended work shifts on worker health and safety.

[Improving Shift Work Schedules](#). American Federation of State, County and Municipal Employees. Addresses health effects of shift work and ways to improve work schedules.

[Your Guide to Healthy Sleep](#) (PDF). National Heart, Blood and Lung Institute. Provides information about common sleep myths, practical tips for getting enough sleep and coping with nighttime shiftwork.

[Working Time, Health and Safety: A Research Synthesis Paper](#) (PDF). International Labour Organization. Brings together research on working hours, worker health, well-being, and workplace safety.

For more information on the Ebola outbreak, please see the following: [CDC Ebola](#) website, [NIOSH Ebola](#) topic page, and [OSHA Ebola](#) website.

¹ Luyster FS, Strollo PJ Jr, Zee PC, Walsh JK [2012]. Sleep: a health imperative. *Sleep* 35:727–734.

² Dembe A, Erickson JB, Delbos RG, Banks SM [2005]. The impact of overtime and long work hours on occupational injuries and illnesses: New evidence from the United States. *Occup Environ Med* 62:588–597.

³ Smith CS, Folkard D, Tucker P, Evans MS [2011]. Work schedules, health, and safety. In Quick JC, Tetrick LE, eds. *Handbook of occupational health psychology*. 2nd ed. Washington, DC: American Psychological Association, pp. 185–204.

For More Information

NIOSH

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OSHA

800-321-OSHA (6742)
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